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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,675	10/31/2005	Satoshi Takei	125640	1819
25944	7590	10/17/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER DEO, DUY VU NGUYEN	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 10/17/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,675	<b>Applicant(s)</b> TAKEI ET AL.	
	<b>Examiner</b> Duy-Vu N. Deo	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7 and 9-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7 and 9-13 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/20/07</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claim 13 is rejected under 35 U.S.C. 102(a) as being anticipated by Uenishi (JP 2002-081328):

U.S. Patent Application 10/392,814 claims a foreign priority to the JP 2002-081328. Therefore, it is considered to be the correct translation of the JP application.

Uenishi describes a method for forming resist pattern comprising forming an intermediate layer on a substrate, heating the intermediate layer, forming a photoresist layer on the intermediate layer, exposing and developing the photoresist layer to form a pattern, etching the intermediate layer corresponding to the pattern of the photoresist layer (paragraphs 0188-0193). The intermediate layer is made from polymer, solvent, azo initiators (claimed blowing group), and organic materials (paragraphs 0033, 0057-0061, 0165). Therefore, this would form claimed porous underlayer coating made from a blowing agent or polymer having a blowing group, organic material, and a solvent. This would create claimed porous coating occupied by pores of 5-80% at a rate of volume on the substrate.

Referring to claims 7 and 8, the composition described above would decomposed when heated to generate nitrogen, carbon dioxide, or water vapor since they make up of the same chemical as that of claimed invention.

Referring to claims 9-12, the crosslink compounds contain 3-5 benzene rings per molecule (paragraph 0061).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 4, 7, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uenishi (JP 2002-081328).

U.S. Patent Application 10/392,814 claims a foreign priority to the JP 2002-081328. Therefore, it is considered to be the correct translation of the JP application.

Uenishi describes a method for forming resist pattern comprising forming an intermediate layer on a substrate, heating the intermediate layer, forming a photoresist layer on the intermediate layer, exposing and developing the photoresist layer to form a pattern, etching the intermediate layer corresponding to the pattern of the photoresist layer (paragraphs 0188-0193). The intermediate layer is made from polymer, solvent, azo initiators (claimed blowing group), and organic materials (paragraphs 0033, 0057-0061, 0165). Therefore, this would form claimed porous underlayer coating made from a blowing agent or polymer having a blowing group, organic material, and a solvent.

This would create claimed porous coating occupied by pores of 5-80% at a rate of volume on the substrate. Unlike claimed invention, Uenishi doesn't describe the blowing agent concentration is 2-30 mass% of solid content of the composition. However, in the absent of unexpected result of the claimed range of blowing agent concentration, one skilled in the art would find it obvious to determine the blowing agent concentration through routine experimentation in order to provide optimum amount of blowing agent to form the porous underlay coating.

Referring to claims 7 and 8, the composition described above would decomposed when heated to generate nitrogen, carbon dioxide, or water vapor since they make up of the same chemical as that of claimed invention.

Referring to claims 9-12, the crosslink compounds contain 3-5 benzene rings per molecule (paragraph 0061).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uenishi as applied to claim 1 above, and further in view of Adams et al. (US 2002/0172896).

Referring to claim 2, Uenishi doesn't explicitly describe forming an antireflective layer before or after forming the intermediate layer. However, at the time of the invention using an antireflective layer for a photoresist process is well known to one skilled in the art. Adams teaches using an antireflective layer during a photoresist process (paragraphs 0009, 0074-0077). One skilled in the art would find it obvious in light of Adams' teaching to use an antireflective layer because it would reduce the

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problem of reflected radiation between the substrate and the photoresist layer as taught by Adams (paragraph 0009). It is obvious that the antireflective layer can be formed either before or after forming the intermediate layer as long as it is formed between the photoresist and the substrate.

### ***Allowable Subject Matter***

6. Claim 5 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 5 is allowable because applied prior art doesn't suggest or teach the blowing agent is selected from the group consisting of 4,4-oxybisbenzene sulfonyl hydrazide and azodicarbonamide.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-5, 7, 9-13 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy-Vu N. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Duy-Vu N Deo  
Primary Examiner  
Art Unit 1792

10/15/07

